

GRASSLAND BYPASS PROJECT

MONTHLY DATA REPORT

October 2003

January 8, 2004

Preliminary Results

A cooperative effort of:

U.S. Bureau of Reclamation
Central Valley Regional Water Quality Control Board
U.S. Fish and Wildlife Service
California Department of Fish and Game
San Luis & Delta-Mendota Water Authority
U.S. Environmental Protection Agency
U.S. Geological Survey

compiled by San Francisco Estuary Institute





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Table 1. Continuous water monitoring at Station A (inflow to San Luis Drain), October 2003.

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Specific Conductance
DATA SOURCE	SLDMWA	SLDMWA
UNITS	cfs	µS/cm
Oct-01-2003	12	4,880
Oct-02-2003	15	4,280
Oct-03-2003	19	4,430
Oct-04-2003	23	3,950
Oct-05-2003	23	4,480
Oct-06-2003	25	4,760
Oct-07-2003	23	4,810
Oct-08-2003	21	4,750
Oct-09-2003	18	4,830
Oct-10-2003	18	4,980
Oct-11-2003	20	4,740
Oct-12-2003	18	4,990
Oct-13-2003	17	5,230
Oct-14-2003	17	5,240
Oct-15-2003	18	5,120
Oct-16-2003	18	4,550
Oct-17-2003	17	4,380
Oct-18-2003	18	4,500
Oct-19-2003	18	4,650
Oct-20-2003	16	4,840
Oct-21-2003	14	5,360
Oct-22-2003	14	5,350
Oct-23-2003	16	4,700
Oct-24-2003	16	4,330
Oct-25-2003	17	4,530
Oct-26-2003	16	4,640
Oct-27-2003	17	5,030
Oct-28-2003	18	5,790
Oct-29-2003	17	5,120
Oct-30-2003	17	5,040
Oct-31-2003	16	5,140
Mean	18	4,820

Table 2a. Continuous water monitoring at Station B (discharge from San Luis Drain), October 2003.

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	Boron	Specific Conductance	Selenium (total)	Selenium (total) Load
DATA SOURCE	USGS	USGS	CVRWQCB	CVRWQCB	CVRWQCB	Computed
UNITS	cfs	°C	mg/L	µS/cm	µg/L	lbs
Oct-01-2003	15	23.1	7.5	4,300	34.4	2.8
Oct-02-2003	17	22.5	7.0	4,030	31.7	2.9
Oct-03-2003	19	22.1	6.8	4,020	34.4	3.5
Oct-04-2003	23	22.2	7.0	4,080	35.4	4.4
Oct-05-2003	26	22.2	6.7	3,890	29.2	4.1
Oct-06-2003	28	22.4	7.3	4,150	35.2	5.3
Oct-07-2003	28	22.4	8.0	4,390	31.4	4.7
Oct-08-2003	28	22.6	7.3	4,270	41.8	6.3
Oct-09-2003	26	22.3	6.9	4,200	57.0	8.0
Oct-10-2003	26	19.8	6.7	4,130	58.3	8.2
Oct-11-2003	24	18.7	7.7	4,590	59.0	7.6
Oct-12-2003	26	19.0	8.0	4,850	70.4	9.9
Oct-13-2003	24	18.6	8.0	4,780	68.9	8.9
Oct-14-2003	23	18.5	7.7	4,690	65.5	8.1
Oct-15-2003	22	19.0	7.2	4,510	62.8	7.5
Oct-16-2003	23	19.2	7.2	4,610	65.4	8.1
Oct-17-2003	22	19.5	7.2	4,680	70.9	8.4
Oct-18-2003	22	19.8	7.2	4,560	66.6	7.9
Oct-19-2003	23	20.2	7.1	4,590	64.8	8.0
Oct-20-2003	23	20.4	7.2	4,570	62.9	7.8
Oct-21-2003	21	20.7	7.2	4,560	63.9	7.2
Oct-22-2003	20	21.1	6.8	4,350	59.6	6.4
Oct-23-2003	20	20.7	6.4	4,070	57.8	6.2
Oct-24-2003	21	20.0	6.5	3,980	51.9	5.9
Oct-25-2003	21	20.1	6.3	3,990	50.1	5.7
Oct-26-2003	22	20.1	6.5	4,160	48.8	5.8
Oct-27-2003	21	20.1	6.4	4,170	50.4	5.7
Oct-28-2003	21	20.0	7.4	4,360	52.7	6.0
Oct-29-2003	23	19.6	7.7	4,500	56.9	7.1
Oct-30-2003	22	17.5	7.3	4,290	50.3	6.0
Oct-31-2003	23	16.0	5.9	3,830	42.6	5.3
Mean	23	20.3	7.1	4,330	52.6	6.4
Total Acre-feet	1,390					
Total (lbs)						200

Load Limitation for October 2003 (lbs)	301
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Table 2b. Continuous water monitoring at San Luis Drain Outlet, October 2003.

Note: This is unofficial data reported for comparison with Station B.

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	San Luis Drain Outlet Flow	Selenium (total) *	Selenium (total) Load
DATA SOURCE	SLDMWA	CVRWQCB	Computed
UNITS	cfs	µg/L	lbs
Oct-01-2003	15	34.4	2.8
Oct-02-2003	17	31.7	2.9
Oct-03-2003	20	34.4	3.7
Oct-04-2003	24	35.4	4.5
Oct-05-2003	27	29.2	4.2
Oct-06-2003	29	35.2	5.5
Oct-07-2003	30	31.4	5.0
Oct-08-2003	29	41.8	6.5
Oct-09-2003	26	57.0	8.1
Oct-10-2003	23	58.3	7.2
Oct-11-2003	24	59.0	7.7
Oct-12-2003	25	70.4	9.4
Oct-13-2003	24	68.9	9.0
Oct-14-2003	23	65.5	8.1
Oct-15-2003	23	62.8	7.6
Oct-16-2003	23	65.4	8.1
Oct-17-2003	23	70.9	8.7
Oct-18-2003	23	66.6	8.1
Oct-19-2003	23	64.8	8.1
Oct-20-2003	24	62.9	8.1
Oct-21-2003	22	63.9	7.6
Oct-22-2003	20	59.6	6.4
Oct-23-2003	19	57.8	6.0
Oct-24-2003	21	51.9	6.0
Oct-25-2003	22	50.1	5.9
Oct-26-2003	22	48.8	5.8
Oct-27-2003	22	50.4	5.9
Oct-28-2003	22	52.7	6.3
Oct-29-2003	23	56.9	7.0
Oct-30-2003	22	50.3	6.0
Oct-31-2003	23	42.6	5.2
Mean	23	52.6	6.5
Total Acre-feet	1,410		
Total (lbs)			201

The US Geological Survey determines flow at Station B through continuous measurements of stage that is rated for a known cross-section. These flow data, listed in Table 2a, are verified with frequent current meter measurements.

Monitoring and Reporting Program No. 5-101-234 states:

"Samples representative of the discharge shall be collected from the San Luis Drain at the footbridge between Gun Club Road and the terminus (Site B)."

Accurate flow measurements are necessary to determine compliance with selenium load limits specified in Waste Discharge Requirement Order No. 5-101-234.

The accumulation of sediments, as documented in the 2001 Annual Report, have caused irregularities in flow measurements at Station B, resulting in "shifts" in the relationship between stage and discharge.

To improve the accuracy of flow measurements, Reclamation and the San Luis & Delta-Mendota Water Authority, with technical assistance from the USGS, propose to measure flow at the San Luis Drain Outlet. The Outlet is located two miles from Station B. Discharge will be measured as stage over a sharp-crested weir, identical to Station A. This is a simpler and more accurate method that will not be altered by sediment accumulation.

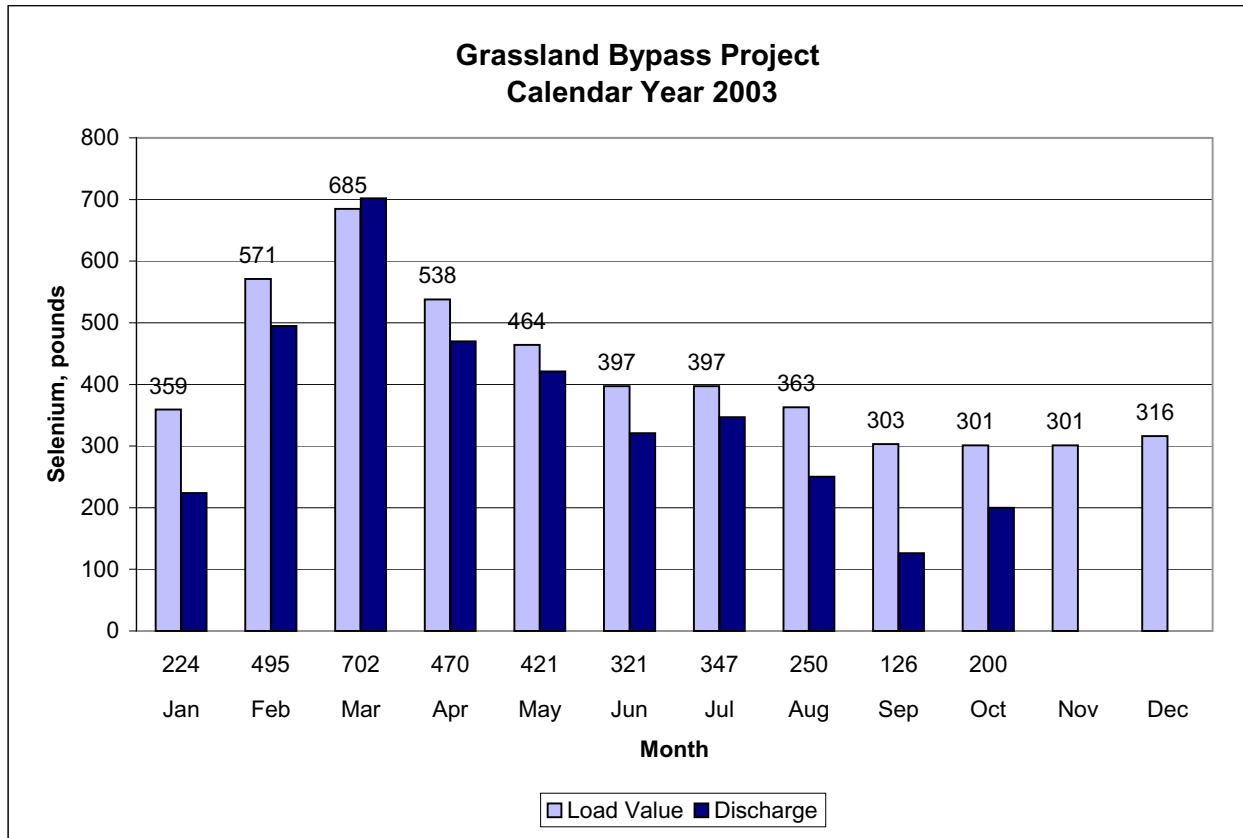
This change is subject to approval by the California Regional Water Quality Board and modification of the Waste Discharge Requirement Order and Monitoring and Reporting Program. It is anticipated that flow will be measured solely at the Outlet works for determination of GBP flow discharge.

Unofficial flow data for the Outlet works are presented in Table 2b for comparison and are not used to determine compliance with the Waste Discharge Requirement Order.

*Selenium (total) concentrations from Site B (San Luis Drain)

Note: USGS is verifying flow data for the SLD Terminus.

Figure 2c. Monthly selenium discharges from the terminus of the San Luis Drain into Mud Slough compared to load values.



**Table 3. Continuous water monitoring at Station D
(Mud Slough North downstream of drainage discharges), October 2003.**

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	Specific Conductance
DATA SOURCE	usgs	usgs	usgs
UNITS	cfs	°C	µS/cm
Oct-01-2003	85	22.6	1,410
Oct-02-2003	89	21.8	1,460
Oct-03-2003	94	21.6	1,470
Oct-04-2003	108	21.8	1,520
Oct-05-2003	115	21.8	1,550
Oct-06-2003	123	22.1	1,530
Oct-07-2003	126	22.5	1,600
Oct-08-2003	121	22.5	1,640
Oct-09-2003	126	21.9	1,540
Oct-10-2003	132	19.2	1,350
Oct-11-2003	125	18.2	1,510
Oct-12-2003	136	18.7	1,480
Oct-13-2003	143	18.2	1,460
Oct-14-2003	141	18.4	1,430
Oct-15-2003	132	18.9	1,430
Oct-16-2003	127	19.1	1,460
Oct-17-2003	129	19.6	1,560
Oct-18-2003	136	20.0	1,480
Oct-19-2003	157	20.2	1,470
Oct-20-2003	167	20.3	1,470
Oct-21-2003	163	20.9	1,450
Oct-22-2003	170	21.1	1,400
Oct-23-2003	171	20.3	1,360
Oct-24-2003	174	19.7	1,390
Oct-25-2003	170	19.7	1,410
Oct-26-2003	171	19.9	1,430
Oct-27-2003	170	20.0	1,440
Oct-28-2003	169	20.0	1,450
Oct-29-2003	172	19.4	1,490
Oct-30-2003	157	16.7	1,570
Oct-31-2003	158	14.9	1,560
Mean	141	20.1	1,480

Table 4. Continuous water monitoring at Station F (Salt Slough at Highway 165), October 2003.

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	Specific Conductance
DATA SOURCE	usgs	usgs	usgs
UNITS	cfs	°C	µS/cm
Oct-01-2003	69	21.9	1,200
Oct-02-2003	86	21.2	1,110
Oct-03-2003	93	21.0	1,020
Oct-04-2003	103	21.1	1,010
Oct-05-2003	109	21.2	1,040
Oct-06-2003	107	21.6	1,030
Oct-07-2003	114	21.8	1,040
Oct-08-2003	125	21.8	1,050
Oct-09-2003	128	21.2	1,040
Oct-10-2003	130	18.6	1,070
Oct-11-2003	136	17.9	1,050
Oct-12-2003	134	18.2	1,050
Oct-13-2003	138	17.9	1,040
Oct-14-2003	132	18.0	1,020
Oct-15-2003	115	18.3	1,080
Oct-16-2003	108	18.5	1,100
Oct-17-2003	97	19.0	1,170
Oct-18-2003	91	19.2	1,310
Oct-19-2003	95	19.6	1,410
Oct-20-2003	111	19.7	1,270
Oct-21-2003	116	20.0	1,250
Oct-22-2003	126	20.1	1,220
Oct-23-2003	133	19.6	1,200
Oct-24-2003	128	19.0	1,250
Oct-25-2003	131	18.7	1,280
Oct-26-2003	131	18.7	1,310
Oct-27-2003	140	18.8	1,230
Oct-28-2003	135	18.7	1,210
Oct-29-2003	124	18.1	1,270
Oct-30-2003	121	15.7	1,280
Oct-31-2003	121	14.1	1,290
Mean	117	19.3	1,160

Table 5. Continuous water monitoring at Station N (San Joaquin River at Crow's Landing), October 2003.

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	Specific Conductance	Selenium (total)
DATA SOURCE	USGS	USGS	CVRWQCB	CVRWQCB
UNITS	cfs	°C	µS/cm	µg/L
Oct-01-2003	409	21.9	1,020	1.6
Oct-02-2003	400	21.0	1,100	1.5
Oct-03-2003	428	21.0	1,120	1.4
Oct-04-2003	437	21.2	1,060	1.5
Oct-05-2003	492	21.0	1,030	1.6
Oct-06-2003	531	21.4	982	1.7
Oct-07-2003	526	21.7	980	1.6
Oct-08-2003	519	21.8	1,040	1.9
Oct-09-2003	550	21.1	1,080	1.8
Oct-10-2003	552	19.0	1,030	1.8
Oct-11-2003	541	17.9	1,030	2.2
Oct-12-2003	563	18.3	961	2.1
Oct-13-2003	605	17.8	952	2.2
Oct-14-2003	601	17.8	952	2.4
Oct-15-2003	550	18.1	1,030	2.5
Oct-16-2003	517	18.3	1,070	2.5
Oct-17-2003	602	18.7	1,050	2.2
Oct-18-2003	610	18.8	996	2.1
Oct-19-2003	676	19.2	973	2.4
Oct-20-2003	818	19.1	826	1.8
Oct-21-2003	897	19.2	709	1.6
Oct-22-2003	928	19.3	675	1.5
Oct-23-2003	1,010	18.8	659	1.3
Oct-24-2003	1,080	18.3	598	1.1
Oct-25-2003	1,020	18.1	626	1.1
Oct-26-2003	910	18.2	728	1.2
Oct-27-2003	842	18.4	796	1.3
Oct-28-2003	784	18.5	870	1.3
Oct-29-2003	754	18.4	913	1.4
Oct-30-2003	715	16.9	969	1.7
Oct-31-2003	695	15.0	1,020	1.8
Mean	663	19.2	930	1.7

Table 6a. Weekly water quality monitoring at Station A (inflow to San Luis Drain), taken from grab samples.

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	.	.	Specific Conductance	Total Suspended Solids	.	.	.
DATA SOURCE	SLDMWA	.	.	CVRWQCB	CVRWQCB	.	.	.
UNITS	cfs	.	.	µS/cm	mg/L	.	.	.
Aug-06-2003	64	.	.	3,680	77	.	.	.
Aug-13-2003	46	.	.	3,620	110	.	.	.
Aug-20-2003	51	.	.	3,650	160	.	.	.
Aug-27-2003	47	.	.	3,450	150	.	.	.
Sep-03-2003	34	.	.	3,680	180	.	.	.
Sep-10-2003	20	.	.	4,630	78	.	.	.
Sep-17-2003	11	.	.	5,560	24	.	.	.
Sep-24-2003	16	.	.	3,970	89	.	.	.
Oct-01-2003	12	.	.	5,480	80	.	.	.
Oct-08-2003	21	.	.	5,020	100	.	.	.
Oct-15-2003	18	.	.	5,060	54	.	.	.
Oct-22-2003	14	.	.	5,110	91	.	.	.
Oct-29-2003	17	.	.	5,200	85	.	.	.

Table 6b. Weekly water quality monitoring at Station A (inflow to San Luis Drain), taken from composite samples.

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	.	.	Specific Conductance	.	Selenium (total)	.	Boron
DATA SOURCE	SLDMWA	.	.	CVRWQCB	.	CVRWQCB	.	CVRWQCB
UNITS	cfs	.	.	µS/cm	.	µg/L	.	mg/L
Aug-05-2003	61	.	.	3,690	.	28.0	.	6.2
Aug-12-2003	50	.	.	3,590	.	26.0	.	5.9
Aug-19-2003	46	.	.	4,200	.	24.0	.	7.4
Aug-26-2003	48	.	.	3,710	.	28.6	.	5.8
Sep-02-2003	34	.	.	3,740	.	34.4	.	5.8
Sep-09-2003	21	.	.	3,950	.	30.6	.	6.3
Sep-16-2003	12	.	.	4,640	.	42.0	.	8.3
Sep-23-2003	14	.	.	5,060	.	54.0	.	8.7
Sep-30-2003	10	.	.	4,830	.	45.0	.	9.3
Oct-07-2003	23	.	.	4,780	.	66.5	.	8.7
Oct-14-2003	17	.	.	5,190	.	81.8	.	8.3
Oct-21-2003	14	.	.	4,810	.	68.5	.	8.2
Oct-28-2003	18	.	.	5,010	.	85.2	.	8.4

Table 7. Weekly water quality monitoring at Station B (discharge from San Luis Drain), taken from grab samples.

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	pH	Specific Conductance	Total Suspended Solids	Selenium (total)	Boron
DATA SOURCE	USGS	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	°C	.	µS/cm	mg/L	µg/L	mg/L
Aug-07-2003	66	24.5	8.4	3,700	51	31.6	6.4
Aug-14-2003	47	24.4	8.5	3,950	63	29.2	6.7
Aug-21-2003	52	25.6	8.9	4,400	39	25.2	8.0
Aug-28-2003	50	25.0	8.4	3,570	NA	25.3	6.0
Sep-04-2003	34	25.8	8.3	3,610	27	31.8	6.0
Sep-11-2003	21	22.7	8.4	4,020	32	28.6	6.7
Sep-18-2003	14	21.2	8.5	4,480	33	36.0	7.5
Sep-25-2003	19	22.7	8.7	4,690	39	36.6	8.0
Oct-02-2003	17	21.8	8.4	3,990	34	30.7	6.8
Oct-09-2003	26	21.3	8.3	4,140	33	55.7	6.6
Oct-16-2003	23	18.6	8.5	4,640	33	65.7	7.3
Oct-23-2003	20	20.1	8.3	4,140	28	55.3	6.6
Oct-30-2003	22	16.7	8.1	4,410	22	51.0	7.5

Table 8. Weekly water quality monitoring at Station C (Mud Slough North upstream of drainage discharges).

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	pH	Specific Conductance	.	Selenium (total)	Boron
DATA SOURCE	calculated **	CVRWQCB	CVRWQCB	CVRWQCB	.	CVRWQCB	CVRWQCB
UNITS	cfs	°C	.	µS/cm	.	µg/L	mg/L
Aug-07-2003	27	23.6	8.2	1,010	.	1.1	1.2
Aug-14-2003	-3	21.8	8.4	930	.	0.8	1.4
Aug-21-2003	0	22.5	8.1	1,260	.	0.6	1.2
Aug-28-2003	18	22.9	7.7	795	.	0.6	0.7
Sep-04-2003	25	24.6	7.7	783	.	0.4	0.6
Sep-11-2003	19	NA	NA	NA	.	NA	NA
Sep-18-2003	34	20.1	7.8	679	.	0.4	0.5
Sep-25-2003	59	21.9	7.5	722	.	<0.4	0.5
Oct-02-2003	72	20.8	7.4	774	.	0.4	0.6
Oct-09-2003	100	20.6	7.4	808	.	<0.4	0.6
Oct-16-2003	104	18.2	7.5	989	.	<0.4	0.7
Oct-23-2003	151	19.4	7.5	986	.	0.5	0.7
Oct-30-2003	135	15.3	7.7	1,150	.	<0.4	0.8

** Calculated flow value. Flow at Station C = flow at Station D - flow at Station B.

Table 9. Weekly water quality monitoring at Station D (Mud Slough North downstream of drainage discharges).

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	pH	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	USGS	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	°C	.	µS/cm	µg/L	mg/L
Aug-07-2003	93	24.1	8.4	2,810	20.9	4.6
Aug-14-2003	44	23.9	8.7	3,560	21.0	6.0
Aug-21-2003	52	25.2	8.4	4,110	21.2	7.4
Aug-28-2003	68	24.2	8.2	2,910	19.4	4.7
Sep-04-2003	59	25.0	8.0	2,640	20.0	4.1
Sep-11-2003	40	23.5	8.3	2,340	13.6	3.6
Sep-18-2003	48	19.6	8.0	1,750	9.2	2.4
Sep-25-2003	78	21.9	7.7	1,650	7.6	2.2
Oct-02-2003	89	20.8	7.6	1,430	6.0	1.8
Oct-09-2003	126	20.7	7.5	1,650	11.0	2.0
Oct-16-2003	127	18.0	7.6	1,630	9.4	1.8
Oct-23-2003	171	19.4	7.6	1,360	5.5	1.3
Oct-30-2003	157	15.6	7.7	1,650	7.1	1.8

Table 10. Weekly water quality monitoring at Station I2 (Mud Slough backwater downstream of Station D).

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER		pH	Specific Conductance	Turbidity	Selenium	Boron
DATA SOURCE		USBR	USBR	USBR	USBR	USBR
UNITS		.	µS/cm	NTU	µg/L	mg/L
Aug-04-2003	.	8.3	3,360	48	17.7	4.7
Aug-11-2003	.	8.0	3,830	35	22.2	5.1
Aug-21-2003	.	8.4	4,080	33	21.2	7.6
Aug-27-2003	.	8.1	3,200	22	18.4	4.8
Sep-04-2003	.	7.1	2,650	22	19.3	4.1
Sep-09-2003	.	8.0	2,840	34	18.4	4.4
Sep-17-2003	.	8.1	2,310	31	10.2	3.2
Sep-24-2003	.	7.7	1,600	19	7.1	2.0
Oct-01-2003	.	7.7	1,400	44	5.4	1.6
Oct-08-2003	.	7.4	1,870	NA	7.7	2.3
Oct-15-2003	.	7.3	1,810	18	9.4	1.9
Oct-21-2003	.	7.5	1,200	15	7.4	1.5
Oct-29-2003	.	7.7	1,640	17	6.6	1.7

Table 11. Weekly water quality monitoring at Station F (Salt Slough at Lander Avenue).

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	pH	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	USGS	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	°C	.	µS/cm	µg/L	mg/L
Aug-07-2003	201	23.0	7.7	824	0.6	0.4
Aug-14-2003	97	22.8	7.8	1,030	0.5	0.4
Aug-21-2003	113	23.9	7.7	839	0.4	0.3
Aug-28-2003	138	23.3	7.7	772	0.6	0.3
Sep-04-2003	74	24.2	7.9	1,060	0.4	0.4
Sep-11-2003	66	20.8	8.0	1,180	0.6	0.6
Sep-18-2003	56	18.3	7.8	1,290	<0.4	0.6
Sep-25-2003	57	19.9	8.0	1,260	<0.4	0.8
Oct-02-2003	86	19.2	7.8	1,070	0.6	0.6
Oct-09-2003	128	19.3	7.8	1,040	NA	0.6
Oct-16-2003	108	17.1	7.8	1,250	0.5	0.6
Oct-23-2003	133	18.4	7.7	1,240	0.6	0.6
Oct-30-2003	121	14.4	7.8	1,240	<0.4	0.6

Table 12. Weekly water quality monitoring at Station J (Camp 13 Ditch).

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	.	.	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	SLDMWA ^{††}	.	.	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	.	.	µS/cm	µg/L	mg/L
Aug-06-2003	25	.	.	342	0.5	0.2
Aug-13-2003	35	.	.	360	1.0	0.3
Aug-20-2003	75	.	.	382	0.7	0.3
Aug-27-2003	120	.	.	626	1.2	0.4
Sep-03-2003	155	.	.	401	0.9	0.2
Sep-10-2003	180	.	.	400	0.6	0.2
Sep-17-2003	180	.	.	418	0.8	0.2
Sep-24-2003	180	.	.	382	<0.4	0.2
Oct-01-2003	195	.	.	433	0.6	0.2
Oct-08-2003	80	.	.	522	<0.4	0.2
Oct-15-2003	10	.	.	570	<0.4	0.2
Oct-22-2003	17	.	.	583	0.6	0.1
Oct-29-2003	10	.	.	519	<0.4	0.2

Table 13. Weekly water quality monitoring at Station K (Agatha Canal).

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	.	.	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	SLDMWA ^{††}	.	.	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	.	.	µS/cm	µg/L	mg/L
Aug-06-2003	35	.	.	350	0.6	0.2
Aug-13-2003	45	.	.	499	0.9	0.3
Aug-20-2003	45	.	.	293	0.5	0.2
Aug-27-2003	45	.	.	323	0.7	0.2
Sep-03-2003	55	.	.	349	0.7	0.1
Sep-10-2003	140	.	.	383	0.6	0.2
Sep-17-2003	160	.	.	370	0.5	0.2
Sep-24-2003	160	.	.	394	0.4	0.1
Oct-01-2003	160	.	.	433	0.6	0.1
Oct-08-2003	160	.	.	522	<0.4	0.2
Oct-15-2003	50	.	.	570	<0.4	0.2
Oct-22-2003	50	.	.	583	0.6	0.1
Oct-29-2003	50	.	.	519	<0.4	0.2

Table 14. Weekly water quality monitoring at Station L2 (San Luis Canal at splits).

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	.	.	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	SLDMWA ^{††}	.	.	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	.	.	µS/cm	µg/L	mg/L
Aug-06-2003	40	.	.	729	1.1	0.6
Aug-13-2003	95	.	.	504	1.2	0.3
Aug-20-2003	145	.	.	420	0.7	0.3
Aug-27-2003	145	.	.	491	1.1	0.3
Sep-03-2003	145	.	.	575	1.0	0.3
Sep-10-2003	145	.	.	573	1.0	0.4
Sep-17-2003	145	.	.	449	0.7	0.2
Sep-24-2003	145	.	.	406	0.5	0.2
Oct-01-2003	145	.	.	428	0.6	0.2
Oct-08-2003	145	.	.	593	0.4	0.2
Oct-15-2003	145	.	.	572	0.4	0.2
Oct-22-2003	105	.	.	587	0.5	0.1
Oct-29-2003	45	.	.	578	0.4	0.2

Table 15. Weekly water quality monitoring at Station M2 (Santa Fe Canal at weir).

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	.	.	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	SLDMWA ^{††}	.	.	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	.	.	µS/cm	µg/L	mg/L
Aug-06-2003	63	.	.	1,060	1.0	1.5
Aug-13-2003	42	.	.	943	1.1	1.2
Aug-20-2003	57	.	.	680	0.8	0.7
Aug-27-2003	82	.	.	613	0.8	0.4
Sep-03-2003	57	.	.	552	0.7	0.4
Sep-10-2003	66	.	.	578	0.9	0.4
Sep-17-2003	46	.	.	559	0.7	0.4
Sep-24-2003	41	.	.	563	0.4	0.4
Oct-01-2003	58	.	.	578	0.6	0.4
Oct-08-2003	65	.	.	739	0.4	0.5
Oct-15-2003	85	.	.	922	0.5	0.8
Oct-22-2003	70	.	.	952	0.7	0.7
Oct-29-2003	99	.	.	1,190	0.5	1.2

Table 16. Weekly water quality monitoring at Central California Irrigation District Main Canal at Russell Avenue (MER510).

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	.	.	.	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	.	.	.	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	.	.	.	µS/cm	µg/L	mg/L
Aug-06-2003	.	.	.	278	0.5	0.1
Aug-13-2003	.	.	.	289	0.7	0.1
Aug-20-2003	.	.	.	322	0.5	0.2
Aug-27-2003	.	.	.	283	0.6	0.1
Sep-03-2003	.	.	.	348	0.6	0.1
Sep-10-2003	.	.	.	370	0.5	0.1
Sep-17-2003	.	.	.	400	0.5	0.2
Sep-24-2003	.	.	.	380	<0.4	0.1
Oct-01-2003	.	.	.	427	0.5	0.2
Oct-08-2003	.	.	.	533	<0.4	0.1
Oct-15-2003	.	.	.	556	<0.4	0.2
Oct-22-2003	.	.	.	584	0.4	0.1
Oct-29-2003	.	.	.	508	<0.4	0.1

Table 17. Weekly water quality monitoring at Station G (San Joaquin River at Fremont Ford).

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	pH	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	USGS	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	°C	.	µS/cm	µg/L	mg/L
Aug-07-2003	202	23.6	7.8	901	0.6	0.4
Aug-14-2003	135	23.3	7.7	1,270	0.4	0.5
Aug-21-2003	124	24.2	7.8	940	0.4	0.4
Aug-28-2003	147	23.9	8.1	995	0.5	0.4
Sep-04-2003	88	24.6	7.9	1,510	0.4	0.6
Sep-11-2003	76	23.1	8.1	1,680	0.4	0.7
Sep-18-2003	60	19.0	7.9	2,200	<0.4	0.8
Sep-25-2003	72	21.3	8.0	1,690	<0.4	0.6
Oct-02-2003	83	19.7	7.8	1,570	0.5	0.7
Oct-09-2003	115	19.5	7.6	1,240	0.5	0.6
Oct-16-2003	109	17.9	7.9	1,350	<0.4	0.7
Oct-23-2003	120	18.9	7.8	1,350	0.5	0.7
Oct-30-2003	115	15.2	7.5	1,560	<0.4	0.7

Table 18. Weekly water quality monitoring at Station H (San Joaquin River at Hills Ferry).

(Collected data intended for use with biological monitoring.)

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	.	.	.	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	.	.	.	SLDMWA	SLDMWA	SLDMWA
UNITS	.	.	.	µS/cm	µg/L	mg/L
Aug-01-2003	.	.	.	1,700	4.7	1.8
Aug-05-2003	.	.	.	1,510	5.4	1.6
Aug-19-2003	.	.	.	1,940	4.3	1.7
Aug-26-2003	.	.	.	1,700	4.8	1.7
Sep-02-2003	.	.	.	1,530	4.5	1.4
Sep-09-2003	.	.	.	1,960	6.9	1.9
Sep-16-2003	.	.	.	1,860	3.2	1.5
Sep-30-2003	.	.	.	1,310	3.0	1.1
Oct-07-2003	.	.	.	1,360	3.1	1.2
Oct-14-2003	.	.	.	1,420	4.6	1.1
Oct-21-2003	.	.	.	1,590	4.6	1.2
Oct-28-2003	.	.	.	1,560	3.0	1.1

Table 19. Weekly water quality monitoring at Station N (San Joaquin River at Crow's Landing).

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	pH	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	USGS	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	°C	.	µS/cm	µg/L	mg/L
Aug-07-2003	507	23.5	8.2	1,230	3.3	1.1
Aug-14-2003	388	23.2	8.2	1,460	0.6	1.2
Aug-21-2003	344	24.3	7.9	1,450	2.7	1.3
Aug-28-2003	392	23.1	7.9	1,300	2.9	1.1
Sep-04-2003	352	24.6	8.0	1,390	2.3	0.9
Sep-11-2003	351	23.2	8.0	1,310	1.8	0.9
Sep-18-2003	251	19.3	7.8	1,450	1.7	0.9
Sep-25-2003	344	21.8	8.0	1,180	1.6	0.7
Oct-02-2003	400	20.2	7.8	1,110	1.5	0.7
Oct-09-2003	550	20.2	7.7	1,060	1.7	0.7
Oct-16-2003	517	16.9	7.6	1,100	2.5	0.8
Oct-23-2003	1,010	18.4	7.7	634	1.3	0.4
Oct-30-2003	715	16.5	7.7	983	1.5	0.6

Table 20. Summary of fathead minnow (*Pimephales promelas*) larvae survival in 7-day tests using water samples collected from November 2002 to October 2003. Each value is the mean of 4 replicates with 10 fish in each replicate.

See Table 27 for explanation of footnotes and agency abbreviations.

LOCATION	Station B	Station C	Station D	Station F	Delta Mendota Canal	Laboratory Control
DATA SOURCE	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA
UNITS	%	%	%	%	%	%
Nov-2002	98	55*	83	65*	100	100
Dec-2002	100	88	78*	98	98	100
Jan-2003	98	65*	80	95	88	80
Feb-2003	98	78	73	88	98	100
Mar-2003	93	85*	100	95	100	100
Apr-2003	90	100	100	75*	88	100
May-2003	98	100	100	95	100	100
Jun-2003	95	93	98	93	65†	100
Jul-2003	95	100	93	98	93	100
Aug-2003	95	98	95	93	95	98
Sep-2003	100	100	95	93	98	100
Oct-2003	100	100	93	100	100	100

Table 21. Summary of fathead minnow (*Pimephales promelas*) larvae growth in 7-day tests using water samples collected from November 2002 to October 2003. Each value is the mean of 4 replicates with 10 fish in each replicate.

See Table 27 for explanation of footnotes and agency abbreviations.

LOCATION	Station B	Station C	Station D	Station F	Delta Mendota Canal	Laboratory Control
DATA SOURCE	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA
UNITS	mg	mg	mg	mg	mg	mg
Nov-2002	0.41	0.22*	0.41	0.27*	0.38	0.33
Dec-2002	0.55	0.48*	0.49*	0.60	0.57	0.52
Jan-2003	0.37	0.32	0.33	0.32	0.40	0.35
Feb-2003	0.27	0.24	0.22	0.25	0.26	0.30
Mar-2003	0.33	0.36	0.34	0.28	0.30	0.35
Apr-2003	0.34	0.50	0.47	0.31	0.30	0.24
May-2003	0.37*	0.46*	0.40*	0.46	0.50	0.30
Jun-2003	0.47	0.43	0.40	0.40	0.47	0.37
Jul-2003	0.58*	0.61*	0.73	0.65	0.71	0.65
Aug-2003	0.39	0.38	0.33	0.33	0.33	0.33
Sep-2003	0.46	0.37	0.45	0.38	0.31	0.38
Oct-2003	0.32	0.38	0.32	0.37	0.31	0.29

Table 22. Summary of *Daphnia magna* survival in 7-day tests using water samples collected from November 2002 to October 2003. Each value is the mean of 10 replicates with 1 animal in each replicate.

See Table 27 for explanation of footnotes and agency abbreviations.

LOCATION	Station B	Station C	Station D	Station F	Delta Mendota Canal	Laboratory Control
DATA SOURCE	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA
UNITS	%	%	%	%	%	%
Nov-2002	60*†† D	100	100	100	100	100
Dec-2002	100	100	100	90	100	90
Jan-2003	90	90	100	90	100	100
Feb-2003	100	100	100	100	100	100
Mar-2003	100	100	90	90	100	90
Apr-2003	90	100	100	100	80	100
May-2003	100	100	100	80	100	100
Jun-2003	90	100	90	100	80	90
Jul-2003	100	90	100	90	80	100
Aug-2003	90	100	90	90	90	100
Sep-2003	60*	100	100	90	100	90
Oct-2003	60*	100	100	100	100	100

Table 23. Summary of *Daphnia magna* reproduction in 7-day tests using water samples collected from November 2002 to October 2003. Each value is the mean of 10 replicates with 1 animal in each replicate.

See Table 27 for explanation of footnotes and agency abbreviations.

LOCATION	Station B	Station C	Station D	Station F	Delta Mendota Canal	Laboratory Control
DATA SOURCE	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA
UNITS	neonates per female	neonates per female	neonates per female	neonates per female	neonates per female	neonates per female
Nov-2002	7.9* D	30.3	33.5	29.5	18.4	20.3
Dec-2002	22.8	26.3	36.7	29.9	26.7	21.4
Jan-2003	30.1	37.0	38.8	26.3*	38.6	43.0
Feb-2003	36.1	38.0	32.9	37.0	35.0	28.7
Mar-2003	50.9	43.2	46.6	44.4	44.0	41.5
Apr-2003	38.5	42.0	43.3	34.6	31.1	35.1
May-2003	31.7	29.2	34.6	19.0*	30.4	23.7
Jun-2003	28.5	23.0	24.3	29.7	19.5	27.4
Jul-2003	39.9	28.8	46.9	28.2	25.0	26.0
Aug-2003	30.1	33.5	29.0	24.4	33.5	26.7
Sep-2003	25.1	30.1	36.1	31.2	33.0	25.6
Oct-2003	23.3	48.1	52.8	41.5	33.8	23.0

Table 24. Summary of *Selenastrum capricornutum* growth in 4-day tests using water samples collected from November 2002 to October 2003. Each value is the mean of 4 replicates.

See Table 27 for explanation of footnotes and agency abbreviations.

LOCATION	Station B	Station C	Station D	Station F	Delta Mendota Canal	Laboratory Control
DATA SOURCE	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA
UNITS	10 ⁵ cells/mL	10 ⁵ cells/mL	10 ⁵ cells/mL	10 ⁵ cells/mL	10 ⁵ cells/mL	10 ⁵ cells/mL
Nov-2002	10.8*	15.7	11.9*	10.8*	15.7	14.2
Dec-2002	7.3‡	9.7	10.0	6.8‡	2.4 † † † †	7.7‡‡‡
Jan-2003	3.9*	11.7	10.2	5.7*	7.7‡	7.7‡
Feb-2003	0.6*	2.0*‡	1.0*‡	1.5*	3.0††††	1.2††††
Mar-2003	12.4*	18.4	14.6	20.3	17.4	22.2
Apr-2003	11.1*	15.4	13.3	8.9*	15.7	27.6
May-2003	8.4*	12.9	10.4	10.9	12.1	13.2
Jun-2003	16.2*	15.8*	13.2*	22.8*	31.6	35.2
Jul-2003	15.9*	22.7	12.1*	8.7*	19.5	16.6
Aug-2003	11.9*	13.6	11.7*	13.9	14.5	10.9
Sep-2003	11.8*	15.5	14.5*	13.9*	15.9	12.2
Oct-2003	10.0	12.6	12.2	8.6*	9.9††††	8.7††††

Table 25. Summary of selenium concentrations in grab water samples collected at study stations for use in laboratory toxicity tests, August 2003 to October 2003.

See Table 27 for explanation of footnotes and agency abbreviations.

LOCATION	Station B	Station C	Station D	Station F	Delta Mendota Canal
DATA SOURCE #	SLDMWA/USBR	SLDMWA/USBR	SLDMWA/USBR	SLDMWA/USBR	SLDMWA/USBR
UNITS	µg/L	µg/L	µg/L	µg/L	µg/L
Aug-18-2003	18	0.8	16	<0.4	<0.4
Aug-20-2003	22	0.7	18	<0.4	<0.4
Aug-22-2003	22	0.8	17	<0.4	<0.4
Sep-15-2003	28	<0.4	10	<0.4	<0.4
Sep-17-2003	36	0.5	7.9	<0.4	<0.4
Sep-19-2003	31	0.5	10	<0.4	<0.4
Oct-13-2003	64	0.4	10	<0.4	<0.4
Oct-15-2003	65	<0.4	10	<0.4	<0.4
Oct-17-2003	69	<0.4	11	<0.4	<0.4

Table 26. Summary of total suspended solids concentrations in grab water samples collected from August 2003 to October 2003.

See Table 27 for explanation of footnotes and agency abbreviations.

LOCATION	Station B	Station C	Station D	Station F	Delta Mendota Canal
DATA SOURCE	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA
UNITS	mg/L	mg/L	mg/L	mg/L	mg/L
Aug-18-2003	69	110	89	216	45
Aug-20-2003	58	116	74	187	50
Aug-22-2003	36	193	183	262	30
Sep-15-2003	35	74	121	121	33
Sep-17-2003	67	93	90	79	46
Sep-19-2003	30	127	128	170	30
Oct-13-2003	19	35	38	77	18
Oct-15-2003	40	27	28	76	5
Oct-17-2003	55	30	36	164	13

Table 27. Explanations of footnotes and agency abbreviations.

Footnote	Explanation
CVRWQCB	California Regional Water Quality Control Board, Central Valley Region
SLDMWA	San Luis & Delta-Mendota Water Authority
USBR	U.S. Bureau of Reclamation
USGS	U.S. Geological Survey
e	Estimated value
.	Not applicable
<	Less than MDL. If needed in calculation, use 1/2 MDL
NA	Not analyzed - operator error, data will not be available in the future
NP	Not Provided. Data may be available in the future.
NT	Not tested
P	Pending, data not available at this time but will be available in the future
*	Significantly reduced from Delta Mendota Canal (p<0.05)
**	Sample re-analyzed and result confirmed.
†	DMC water failed to meet the survival (>80%) acceptability criteria.
††	Data from records of the Grassland Water District. Data is not subjected to the criteria documented in the Compliance Monitoring Program for the Use and Operation of the Grassland Bypass Project (1996) nor the Quality Assurance Project Plan for the GBP.
†††	DMC water failed to meet the reproduction (>10 neonates/adult) acceptability criteria.
††††	DMC water failed to meet minimum growth (10 ⁶ cell/mL) acceptability criteria.
‡	Control value exceeds suggested maximum variance (20%) acceptability criteria.
‡‡	Fungal growth observed on test organisms.
‡‡‡	Failed cell density requirement of 1E6 cells.
#	New testing laboratory with reporting limit of 0.4 µg/L as of June 1998.
√	Based on definitive bioassay, NOEC is 50 percent
D	Sample was dechlorinated